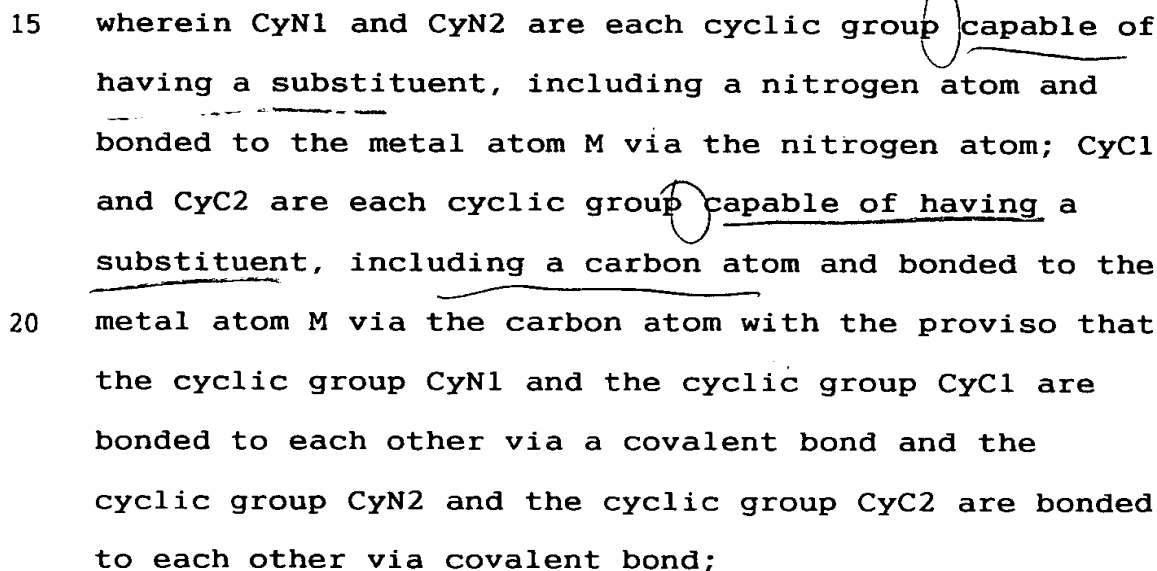


2 lone pairs of e^- 's

5 wherein M is a metal atom of Ir, Pt, Rh or Pd; L and
L' are mutually different bidentate ligands; m is 1, 2
or 3 and n is 0, 1 or 2 with the proviso that m+n is 2
or 3; a partial structure ML_m is represented by
formula (2) shown below and a partial structure ML'_n
10 is represented by formula (3) or (4) shown below:



25 the optional substituent of the cyclic groups
is selected from a halogen atom, cyano group, a nitro
group, a trialkylsilyl group of which the alkyl groups

are independently a linear or branched alkyl group having 1 to 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-,
5 -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom, or an aromatic group capable of having a substituent (that
10 is a halogen atom, a cyano atom, a nitro atom, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH-
15 or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom);

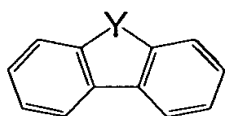
E and G are independently a linear or branched alkyl group having 1 to 20 carbon atoms of
20 which the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom, or an aromatic group capable of having a substituent (that is a halogen atom, a cyano atom, a nitro atom, a trialkylsilyl group of which the alkyl groups are
25 independently a linear or branched alkyl group having 1 - 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group

can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be

5 optionally replaced with a fluorine atom; and

at least one of the optional substituent(s) of the cyclic groups, and the cyclic groups CyC1 and CyC2 include an aromatic group capable of having a substituent represented by the following formula (5):

10



(5)

wherein the aromatic group of the formula (5) is bonded to CyN1, CyN2, CyC1 or CyC2 via a single bond when the aromatic group is the optional substituent(s) of the cyclic groups, and the aromatic group of the formula (5) is bonded to CyN1 or CyN2 via a single bond and bonded to the metal atom M via a single bond when the aromatic group is CyC1 or CyC2;

20 Y denotes C=O, CRR', C=C(CN)₂, O or S wherein R and R' are independently a hydrogen atom, a linear or branched alkyl group having 1 to 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-
25 neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen

atom that can be optionally replaced with a fluorine atom, or an aromatic group capable of having a substituent (that is a halogen atom, a cyano atom, a nitro atom, a trialkylsilyl group of which the alkyl groups are independently a linear or branched alkyl group having 1 - 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom); and

the optional substituent of the aromatic group of the formula (5) is selected from a halogen atom, cyano group, a nitro group, a trialkylsilyl group of which the alkyl groups are independently a linear or branched alkyl group having 1 to 8 carbon atoms, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom, or an aromatic group capable of having a substituent (that is a halogen atom, a cyano atom, a nitro atom, a linear or branched alkyl group having 1 to 20 carbon atoms of which the alkyl group can

include one or non-neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH- or -C≡C-, and the alkyl group can include a hydrogen atom that can be optionally
5 replaced with a fluorine atom) with the proviso that an adjacent pair of substituents can be bonded to form a cyclic structure.

2. A metal coordination compound according to
10 Claim 1, including a partial structure ML'_n represented by the formula (3) in the formula (1).

3. A metal coordination compound according to
Claim 1, including a partial structure ML'_n
15 represented by the formula (4) in the formula (1).

4. A metal coordination compound according to
Claim 1, wherein n is 0 in the formula (1).

20 5. A metal coordination compound according to Claim 1, wherein the group Y in the formula (5) is $C=O$ or CRR' .

6. A metal coordination compound according to
25 Claim 1, wherein the cyclic groups $CyC1$ and $CyC2$ are independently selected from phenyl group, thienyl group, thianaphthyl group, naphthyl group, pyrenyl

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group, 9-fluorenonyl group, fluorenyl group, dibenzofuryl group, dibenzothienyl group, or carbazolyl group, as an aromatic cyclic group capable of having a substituent with the proviso that the aromatic cyclic group can include one or two CH groups that can be replaced with a nitrogen atom.

7. A metal coordination compound according to Claim 6, wherein the cyclic groups CyC1 and Cy2 are independently phenyl group or 2-fluorenyl group.

8. A metal coordination compound according to Claim 1, wherein the cyclic groups CyN1 and CyN2 are independently selected from pyridyl group, pyridazinyl group, and pyrimidinyl group, as an aromatic cyclic group capable of having a substituent.

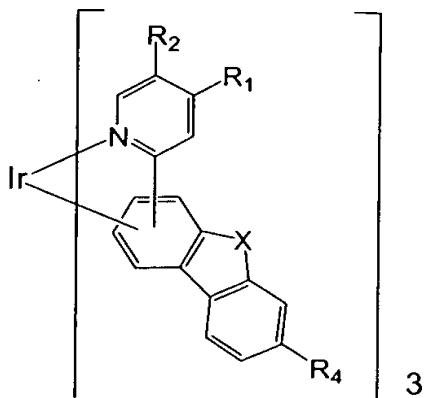
9. A metal coordination compound according to Claim 8, wherein the aromatic cyclic group is pyridyl group.

10. A metal coordination compound according to Claim 1, wherein the cyclic groups CyN1, CyN2, CyC1 and CyC2 are independently non-substituted, or have a substituent selected from a halogen atom and a linear or branched alkyl group having 1 to 20 carbon atoms {of which the alkyl group can include one or non-

neighboring two or more methylene groups that can be replaced with -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH-, -C≡C-, or a divalent aromatic group capable of having a substituent (that is a halogen atom or a linear or branched alkyl group having 1 to 20 carbon atoms (of which the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O-, and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom)), and the alkyl group can include a hydrogen atom that can be optionally replaced with a fluorine atom}.

11. A metal coordination compound according to Claim 1, wherein M in the formula (1) is iridium.

12. A metal coordination compound according to Claim 1, which is represented by the following formula (6):



wherein X denotes CRR', O or S where R and R' are independently a linear or branched alkyl group of formula: C_nH_{2n+1} - in which n is an integer of 1 - 20, the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O- and also can include a hydrogen atom that can be optionally replaced with a fluorine atom;

R2 denotes a hydrogen atom; a fluorine atom; a linear or branched alkyl group of formula: C_nH_{2n+1} - in which n is an integer of 1 - 20, the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O- and also can include a hydrogen atom that can be optionally replaced with a fluorine atom; a phenyl group capable of having a substituent; a 9,9-dialkylfluorenyl group (of which the alkyl groups are independently a linear or branched alkyl group of formula: C_nH_{2n+1} - in which n is an integer of 1 - 20, the alkyl group can include one or non-neighboring two or more methylene groups that can be replaced with -O- and also can include a hydrogen atom that can be optionally replaced with a fluorine atom); a dibenzofuranyl group capable of having a substituent; and a dibenzothienyl group capable of having a substituent; the optional substituent of phenyl group, 9,9-dialkylfluorenyl group, dibenzofuranyl group and dibenzothienyl group is a fluorine atom or a linear or

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